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LABORATORY REPORT

Subject: 1997 CHRYSLER "AN" TRUCK SHIFTER	T.A. No.: 5059
Report Type: BENCH - DESIGN VERIFICATION	File No.: 74S7010D.JK1
Part Number(s): 974J-S7010	Date: October 02, 1996

Title: DESIGN VERIFICATION OF 1997 "AN" TRUCK SHIFTER CONTROL ASSEMBLY

OBJECTIVE:

Determine if the shifter assembly withstands 889N abusive loading without any failure of components.

SAMPLE DESCRIPTION:

Quantity	Sample Numbers	Part Number	Product Level	Test Performed
6	T96-2701 - T96-2706	974J-S7010	Rev 4	Abusive Loading
4	T96-3091 - T96-3094	974J-S7010	Rev 4	Abusive Loading

SUMMARY:

All six samples (T96-2705, T96-2706, T96-3091 through T96-3094) monitored with a switch for cycle counts readjusted or failed during the first 5000 cycles at 121°C.

PROCEDURE:

Data Collection Abusive Test

*Data is collected at the start and end of test for both stations.*

1) Remove air cylinders and pin adaptors from fixture.

2) Install linear drive, lvdt, and load cell on fixture.

3) Record 89 N efficiency.
   a) Disconnect transmission terminal from lash pin.
   b) Remove lash pin from fixture.
   c) Snap column end terminal onto pin on load cell.
   d) Attach trans pin and load hanger to transmission terminal.
   e) Attach 89 N weight to transmission end.
   f) Start linear drive and collect data with HP plotter using manual mode.
   g) Efficiency is calculated as input load (load created by 89 N dead weight) divided by output load (load at linear drive). The efficiency is calculated from the loads recorded while the dead weight is lifted.
   h) Disconnect transmission terminal from weight and load cell.

Distribution: Sales ( ),   Reliability ( ),   Manufacturing ( ),   Library (1),   Project File (1),

cc: W. Bates, O. Iwasiuk
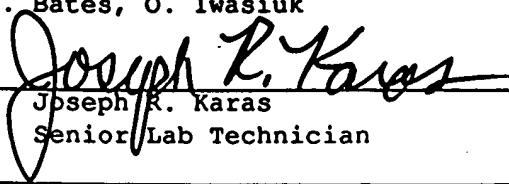
Signed: _Joseph R. Karas_
Joseph R. Karas
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Concurred: _Scott R. Taggart_
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PROCEDURE: (continued)

Data Collection Abusive Test

4) Record 17.8 N lash.
   a) Reattach transmission terminal pin onto test fixture.
   b) Snap the transmission terminal onto the lash pin.
   c) Set linear drive speed to the minimum setting.
   d) Start linear drive and collect data with HP plotter using manual record mode.
   e) Lash is calculated as the travel at the column terminal when the control is cycled between 17.8 N tension and 17.8 N compression.

Abusive Test Cycling

1) Set up durability fixture for cycling.
   a) Remove the linear drive from the test fixture.
   b) Reconnect the air cylinders on the test fixture.
   c) Attach cycling switch to midconduit adjuster.
      When adjuster slips the foil link is broken stopping counter.

2) Set 89 N abusive load for cycling.
   a) Attach 2224 N load cell and adaptor to shifter at the column terminal.
   b) Start air cylinder and collect data with HP plotter using manual record mode.
   c) Adjust air pressure until 89 N load is meet.

3) Start the test and run per the following test parameters.
   a) Cycle rate is 20 cycles per minute.
   b) Cycle sequence is:

      5000 cycles at 121°C.
      30 minute ramp to 23°C.
      5000 cycles at 23°C.
      30 minute ramp to -40°C.
      5000 cycles at -40°C.

DATA:

1997 Chrysler "AN" Truck Shifter Control # 1
Abusive Test - Test Number T96-2701

Cycles	89 N EFFICIENCY (%)	17.8N LASH (mm)
0	87.0	0.80
15,000	86.9	1.10

OBSERVATIONS:

Adjuster set at shipping position.
Adjuster stripping could not be observed at this adjust position.

DATA:

1997 Chrysler "AN" Truck Shifter Control # 2
Abusive Test - Test Number T96-2702

Cycles	89 N EFFICIENCY (%)	17.8N LASH (mm)
0	87.0	0.77
15,000	86.0	1.07

OBSERVATIONS:

Adjuster set at shipping position.
Adjuster stripping could not be observed at this adjust position.

DATA:

1997 Chrysler "AN" Truck Shifter Control # 3
Abusive Test - Test Number T96-2703

Cycles	89 N EFFICIENCY (%)	17.8N LASH (mm)
0	89.6	0.78
15,000	N.R.	N.R.

N.R. - Not recorded

OBSERVATIONS:

Adjuster set at adjust position opposite shipping position.
Adjuster stripped during test, cycle count not recorded.
Data not recorded after 15,000 cycles due to stripped adjuster. Adjuster did return to shipping position.

DATA:

1997 Chrysler "AN" Truck Shifter Control # 4
Abusive Test - Test Number T96-2704

Cycles	89 N EFFICIENCY (%)	17.8N LASH (mm)
0	86.2	0.68
15,000	N.R.	N.R.

N.R. - Not recorded

OBSERVATIONS:

Adjuster set at adjust position opposite shipping position.
Adjuster stripped during test, cycle count not recorded.
Data not recorded after 15,000 cycles due to stripped adjuster. Adjuster did return to shipping position.

DATA:

1997 Chrysler "AN" Truck Shifter Control # 5
Abusive Test - Test Number T96-2705

Cycles	89 N EFFICIENCY (%)	17.8N LASH (mm)
0	88.8	0.79
15,000	N.R.	N.R.

N.R. - Not recorded

OBSERVATIONS:

Adjuster set at adjust position opposite shipping position.
Adjuster stripped at 800 cycles.
Data not recorded after 15,000 cycles due to stripped adjuster. Adjuster did return to shipping position.

DATA:

1997 Chrysler "AN" Truck Shifter Control # 6
Abusive Test - Test Number T96-2706

Cycles	89 N EFFICIENCY (%)	17.8N LASH (mm)
0	86.9	0.77
15,000	N.R.	N.R.

N.R. - Not recorded

OBSERVATIONS:

Adjuster set at adjust position opposite shipping position.
Data not recorded after 15,000 cycles due to failed adjuster. Adjuster did not return to shipping position.

DATA:

1997 Chrysler "AN" Truck Shifter Control # 7
Abusive Test - Test Number T96-3091

Cycles	89 N EFFICIENCY (%)	17.8N LASH (mm)
0	85.2	0.65
15,000	N.R.	N.R.

N.R. - Not recorded

OBSERVATIONS:

Switch with foil strip used to monitor if adjuster strips.
Adjuster set at adjust position opposite shipping position.
Adjuster stripped at 3404 cycles.
Data not recorded after 15,000 cycles due to stripped adjuster. Adjuster did not return to shipping position.

DATA:

1997 Chrysler "AN" Truck Shifter Control # 8
Abusive Test - Test Number T96-3092

Cycles	89 N EFFICIENCY (%)	17.8N LASH (mm)
0	84.1	0.65
15,000	N.R.	N.R.

N.R. - Not recorded

OBSERVATIONS:

Switch with foil strip used to monitor if adjuster strips.
Adjuster set at adjust position opposite shipping position.
Adjuster stripped at 250 cycles.
Data not recorded after 15,000 cycles due to stripped adjuster. Adjuster did return to shipping position.

DATA:

1997 Chrysler "AN" Truck Shifter Control # 9
Abusive Test - Test Number T96-3093

Cycles	89 N EFFICIENCY (%)	17.8N LASH (mm)
0	75.0	0.73
15,000	N.R.	N.R.

N.R. - Not recorded

OBSERVATIONS:

Switch with foil strip used to monitor if adjuster strips.
Adjuster set at adjust position opposite shipping position.
Adjuster stripped at 99 cycles.
Data not recorded after 15,000 cycles due to stripped adjuster. Adjuster did return to shipping position.

DATA:

1997 Chrysler "AN" Truck Shifter Control # 10
Abusive Test - Test Number T96-3094

Cycles	89 N EFFICIENCY (%)	17.8N LASH (mm)
0	79.0	0.51
15,000	N.R.	N.R.

N.R. - Not recorded

OBSERVATIONS:

Switch with foil strip used to monitor if adjuster strips.
Adjuster set at adjust position opposite shipping position.
Adjuster stripped at 99 cycles.
Data not recorded after 15,000 cycles due to stripped adjuster. Adjuster did return
to shipping position.

EQUIPMENT:

XYY Recorder: Hewlett Packer Plotter, Model No. 7090A, Serial No. 2434A00491
            Calibration Date 02/15/97
LVDT: Shavitz, Type HR, Serial Number 12979
            Calibration Date 12/13/96
Load Cell: Interface, Model No. SM-100, Serial No. C46851
Bridge Amp: Gould, Model 11-4123-01, Serial No. 01205-01
            System calibration done at time of test